

IV. REMARKS

The present invention relates to a method for estimating the location of a mobile unit or station in a cellular radio system. The cellular radio system comprises elongate and non-elongate cells. For an illustrative embodiment of the present invention, reference is made to figure 1 where cells 12 and 13 are elongate and cells 5-6, 10, 11 and 19 are non-elongate cells (see page 8, lines 4-24). By categorizing cells as either elongate or non-elongate, the present invention provides a greatly simplified method of locating mobile units. Note that cells 10, 11 and 19, which are larger in area than cells 5 to 9, will still fall under the category of non-elongate cells. Claim 1 only distinguishes between elongate cells and non-elongate cells, and does not distinguish between different sizes of cells.

Claim 1 describes two different methods of estimating the location of the mobile unit depending on whether the cell is elongate or non-elongate.

Vukovich discloses a method for estimating the location of a mobile telephone in a GSM system. Vukovich describes how known antenna characteristics corresponding to a base station maybe used to determine an approximate azimuth direction from the base station to the mobile telephone. This directional information can be used to determine the position of a mobile telephone by applying triangulation techniques using several search base stations together with timing advance data. This method described in Vukovich is based on the antenna of a base station having directional properties, which may result in an elongate cell.

However, Vukovich does not disclose "determining whether the cell is elongate or non-elongate" as defined in claim 1 of the present invention. Furthermore, Vukovich does not disclose or suggest "if the cell is non-elongate, estimating the location of the mobile unit to the location of the base station of the cell".

Singer teaches the determination of whether a cell is a micro cell or whether the cell is larger than a micro cell (see column 2, lines 57 to 67). If the cell is a microcell, the location of tracking device maybe determined solely based upon its location within the coverage area of one such node, where as in cells larger than micro cells, additional steps maybe required to determine the location of the tracking device. These may include triangulation techniques.

It is respectfully submitted that Singer is silent on the features identified as missing from Vokovich, namely those features relating to non-elongate cells. Specifically, Singer does not determine whether the cell is elongate or non-elongate. Singe only determines whether a cell is a micro-cell or a cell larger than a micro-cell. It is submitted that a size of a cell as described in Singer does not read onto whether a cell is elongate or non-elongate as defined in claim 1 of the present invention. Indeed, it is clear from figure 1 of the present application and the description on page 8, lines 4 to 24, that cells that are non-elongate in the present application may be small (cells 5-9) or large (cells 10, 11, 19). The determination of the location of a mobile unit in a non-elongate cell does not vary in accordance with the size of the cell. Indeed, the present application specifically acknowledges that the location of a mobile station in one of the larger cells will be relatively

inaccurate, but as these tend to be rural cells the inaccuracy is accepted (see page 8, lines 18-22).

However, Singer is silent on determining the location of a mobile unit independent on whether a cell is elongate or non-elongate. Singer merely determines the location of the tracking device in dependence on the size of the cell.

In light of the submission above, it is respectfully submitted that claim 1 defines features which are lacking in Vokovich and Singer, both individually and in combination. Specifically, both Vokovich and Singer fail to disclose "determining whether the cell is elongate or non-elongate" and "if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell".

The features defined in claim 1 and the remaining independent claims relating to elongate and non-elongate cells are important as they provide a way of simplifying the method of locating a mobile, while accepting inaccuracy in certain situations such as in rural non-elongate cells. It is submitted that the specific combination of features comprising the method of claim 1 is neither taught nor suggested by the prior art of Vokovich and Singer. Indeed, there is no suggestion in either prior art document that would lead a skilled person to modify that prior art taking into consideration the other prior art to arrive at the present invention of claim 1.

Furthermore, it is respectfully submitted that a person skilled in the art would not even combine the documents of Vokovich and Singer as the former document relates to the field of determining a location of a mobile phone in cells with directional characteristics, whereas Singer relates to determining the

location of a tracking device in a cell that is determined by the size of the cell.

Thus the rejection of claims 1-4 and 8 under 35 USC 103 on Vukovich in view of Singer should be withdrawn.

Similarly, Boltz fails to disclose the above feature. Thus the rejection of claims 5-6 and 9 under 35 USC 103 on Vukovich in view of Singer and Boltz should be withdrawn.

Also, Maloney fails to disclose the above feature. Thus the rejection of claims 7, 10-12, and 16 under 35 USC 103 should be withdrawn.

Further, Kingdon fails to disclose the above feature. Thus the rejection of claims 13 and 17-19 under 35 USC 103 should be withdrawn.

Similarly, the rejection of claims 14-15 and 20-23 should be withdrawn.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of \$420 is enclosed for a two month extension of time. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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May 17, 2004
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